

**U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION**



RECIPIENT: New Jersey Institute of Technology

STATE: NJ

PROJECT TITLE : Renew-Wall

| | | | |
|--|--------------------------------------|----------------------------|-------------------|
| Funding Opportunity Announcement Number | Procurement Instrument Number | NEPA Control Number | CID Number |
| FOA-0002196 | DE-EE0009749 | GFO-0009749-001 | NT9749 |

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

- A9 Information gathering, analysis, and dissemination** Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
- B3.6 Small-scale research and development, laboratory operations, and pilot projects** Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.
- B5.1 Actions to conserve energy or water** (a) Actions to conserve energy or water, demonstrate potential energy or water conservation, and promote energy efficiency that would not have the potential to cause significant changes in the indoor or outdoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, manufacturers, and designers), organizations (such as utilities), and governments (such as state, local, and tribal). Covered actions include, but are not limited to weatherization (such as insulation and replacing windows and doors); programmed lowering of thermostat settings; placement of timers on hot water heaters; installation or replacement of energy efficient lighting, low-flow plumbing fixtures (such as faucets, toilets, and showerheads), heating, ventilation, and air conditioning systems, and appliances; installation of drip-irrigation systems; improvements in generator efficiency and appliance efficiency ratings; efficiency improvements for vehicles and transportation (such as fleet changeout); power storage (such as flywheels and batteries, generally less than 10 megawatt equivalent); transportation management systems (such as traffic signal control systems, car navigation, speed cameras, and automatic plate number recognition); development of energy-efficient manufacturing, industrial, or building practices; and small-scale energy efficiency and conservation research and development and small-scale pilot projects. Covered actions include building renovations or new structures, provided that they occur in a previously disturbed or developed area. Covered actions could involve commercial, residential, agricultural, academic, institutional, or industrial sectors. Covered actions do not include rulemakings, standard-settings, or proposed DOE legislation, except for those actions listed in B5.1(b) of this appendix. (b) Covered actions include rulemakings that establish energy conservation standards for consumer products and industrial equipment, provided that the actions would not: (1) have the potential to cause a significant change in manufacturing infrastructure (such as construction of new manufacturing plants with considerable associated ground disturbance); (2) involve significant unresolved conflicts concerning alternative uses of available resources (such as rare or limited raw materials); (3) have the potential to result in a significant increase in the disposal of materials posing significant risks to human health and the environment (such as RCRA hazardous wastes); or (4) have the potential to cause a significant increase in energy consumption in a state or region.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to the New Jersey Institute of Technology (NJIT) to design, prototype, install, and evaluate a new residential wall retrofit assembly. The assembly would incorporate high-performance storm windows into standard re-siding projects to achieve heating and cooling energy savings. A previously developed insulation/air barrier/water-resistant barrier system would be combined with a thermally-broken window surround (i.e., including a break between the exterior and interior of the frame to prevent

transfer of heat or cold) and a high-performance exterior storm window to create the Renew-Wall system. The project would be completed over three Budget Periods (BPs) with a Go/No-Go decision point between each BP. This NEPA determination is applicable to all three BPs.

A market assessment would be performed in which contractors, distributors, and suppliers would be interviewed to determine level of interest in the Renew-Wall approach. Institutional Review Board approval would be secured if needed for the interviews, focus group, and survey. A modified thermally-broken window surround would be designed to accommodate a high performance storm window that can be installed externally over an existing window and wall and incorporated into standard re-siding projects. On the NJIT campus, components would be assembled into a mocked-up 2-foot by 4-foot wall section and installation methods and components would be evaluated.

At least two contractors would be recruited and trained on Renew-Wall installation. Five single family homes in Northern New Jersey would be selected to have Renew-Wall installed. These homes would belong to homeowners who have sought to have their home resided with traditional siding but would now, under this project, receive insulation and new storm window technology. Houses would be retrofitted with Renew-Wall which would require removal of existing siding and trim, installation of insulation board and the thermally-broken window surround, installation of the high performance storm window, and installation of siding and trim. Building diagnostics would be performed before and after installation to obtain data that would support energy modeling. Tests would include combustion safety testing, blower door tests, and infrared scans of home exteriors. Other data points gathered would include house geometry, orientation, window area, window type, wall assembly, and heating and cooling systems.

Renew-Wall would be evaluated from construction, energy modeling, time/materials/cost, and homeowner perspectives. Contractors and homeowners would be interviewed in order to obtain information relating to experiences and opinion of installation methods. Educational and training materials on implementation of Renew-Wall would be created.

New Jersey Institute of Technology in Newark, NJ would oversee the project and perform design, mockups, analysis, modeling, reporting, and create an online training. Alpen High Performance Products in Niwot, CO and BRINC Building Products in New Bethlehem, PA would assist in design, mockup, and fabrication.

The exact locations for installation of the technology have not been determined but would be identified by project/industry partners and siding contractors during the course of the project. All materials for the installations and physical window buck product would be of composite/material currently available in the public marketplace. The full testing plan would depend on the influence of the builder focus group who would identify locations, installation strategy, and scope/duration of testing. Homeowners may choose a different siding color or type. Authorization of federal funds for the installation of Renew-Wall may be subject to additional Section 106 (National Historic Preservation Act) review and consultation between the DOE and the New Jersey SHPO if the building modifications described above occur on or near any site, building, structure and/or district that is included in or eligible for inclusion in the National Register of Historic Places.

Project activities would involve the use of commercially available building supplies. Some homes may have existing siding with lead-based paint. Standard construction practices for safety would be followed. All waste products would be disposed of by licensed waste management service providers. New Jersey Institute of Technology and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations. No changes in the use, mission, or operation of existing facilities would be required as part of this project and no additional permits would be required in order to conduct any of the work activities.

NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assistance agreement:

Include the following condition in the financial assistance agreement:

Subtask 6D (Retrofit Houses with Renew-Wall) activities are prohibited unless and until the following conditions have been met:

(1) Once the Recipient selects locations for the project, the Recipient must provide a list of all locations that are over 45 years of age and/or within a historic district to the DOE NEPA Compliance Officer at GONEPA@ee.doe.gov;

(2) If DOE determines it necessary, DOE completes Section 106 (National Historic Preservation Act) consultations for the applicable project locations; and

(3) The Recipient receives written authorization from the DOE Contracting Officer to move forward with the activities stated above occurring at historically significant locations.

Notes:

Building Technologies Office

This NEPA determination requires a tailored NEPA provision.

Review completed by Shaina Aguilar on 2/8/22.

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Casey Strickland

NEPA Compliance Officer

Date: 2/10/2022

FIELD OFFICE MANAGER DETERMINATION

- Field Office Manager review not required
 Field Office Manager review required

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____

Field Office Manager

Date: _____